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NOTES ON THE GENUS RHEUMATOBATES BERGROTH
(Hemiptera: Heteroptera)

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This paper includes the descriptions of three new species of *Rheumatobates* Bergroth from Mexico, notes on a few other species and makes *R. crinitus* Herring a variety of *R. vegatus* Drake and Harris. The types of the new species are in the collection of C. J. Drake; paratypes in the collections of both authors. A list of species with distributional records is also appended.

Rheumatobates petilus, sp. new

Apterous form: Small, a little larger than *R. minutus* Hungerford, brownish black with markings testaceous or whitish testaceous. Antennae and middle and hind legs straight, unmodified and simple in both sexes.

Size: Length, 2.30 mm. (male), 2.55 mm. (female); width, 0.90 mm. (male), 1.00 mm. (female).

Head: Width across eyes, 0.80 mm.; interocular space, 0.45 mm. Head black with a very wide V-shaped mark at its base, with usual long dark hairs on each side, also with the two long dark hairs growing out of the hind part of each eye; median line impressed, black, pitted. Eyes large, reddish brown. Rostrum fuscous-brown, shining, with apical segment black, extending a little beyond prosternum. Antennae moderately long, slender, straight, brownish black with basal segment pale testaceous, shortly densely pilose, with usual very long bristly hairs on third segment, also with a few short stiff hairs on second and fourth segments; segments I a little bowed and stouter than the others; formula—I, 30; II, 12; III, 21; IV, 26.

Thorax: Pronotum very short, dark fuscous with the median part between the posterior projections testaceous. Mesonotum large, a little wider than long (50:68), blackish fuscous with median testaceous stripe usually not attaining front margin; sides above acetabula whitish yellow with lower edge almost straight. Metanotum short, blackish. Head, thorax and abdomen above densely clothed with short, recumbent, grayish yellow pubescence; pubescence on ventral surface largely testaceous.

Abdomen: Black-fuscous with hind margin of last tergite brownish; connexiva above usually with some testaceous markings, beneath largely testaceous.

Male: Anterior femora unusually strongly incrassate, brownish black with base above and ventral surface pale testaceous, beneath armed with a sparse row of black spines; tibiae and tarsi black-fuscous, the former hairy above. Middle legs very long, slender, without long hairs, brownish black with coxae and trochanters testaceous; femora stouter and longer

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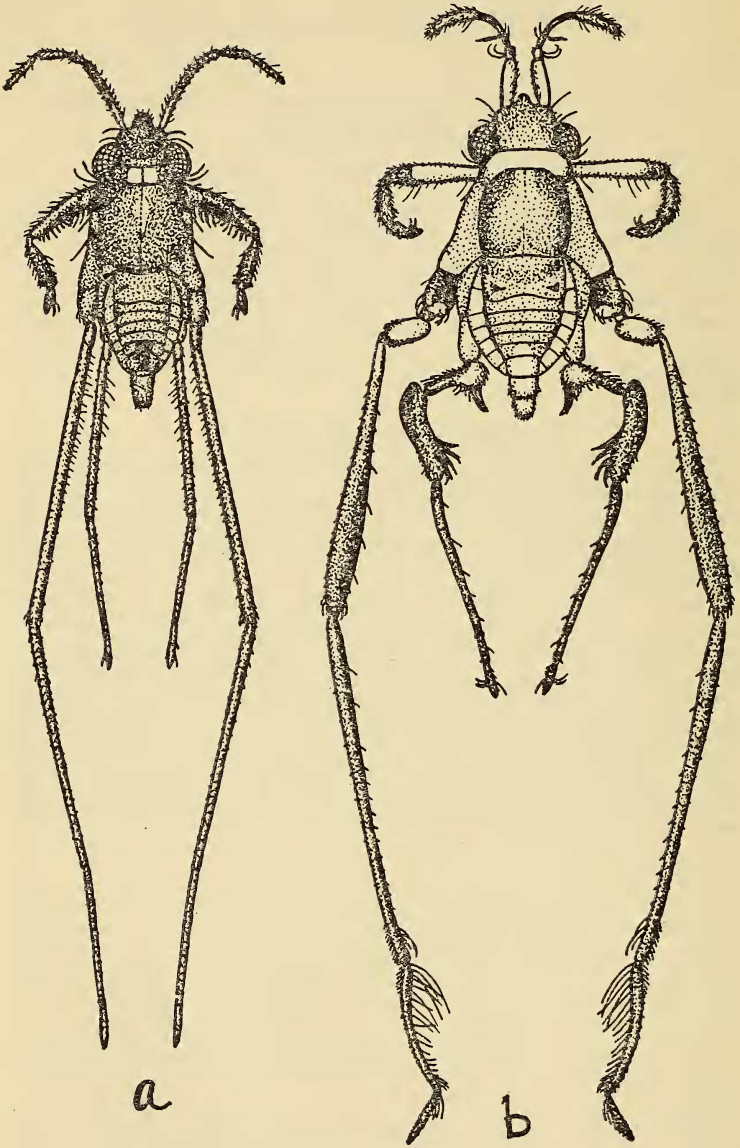


PLATE XIII

Reummotobates—a. *R. clavis*, Drake and Harris; b. *R. crassifemur*, Esaki

than tibiae (140:110). Hind legs much shorter than intermediate pair, brownish black becoming paler basally, slender, with hairs on outside of basal two-fifths of femora slightly longer than the width of the segment; femora much longer than tibiae (110:55); tarsi very short. Last segment of venter testaceous, as long as the two preceding; first genital segment beneath testaceous, flattended, almost quadrate in outline, feebly widely emarginate behind, above convex and rounded behind; second segment beneath testaceous and blackish above.

Female: Front legs not strongly swollen, dark brownish with femora largely testaceous; femore beneath with two sparse rows of long divergent hairs, which are slender and dark brown in color. Middle legs much longer than hind pair; femora within (also basally on the outside) beset with a sparse row of moderately long dark bristly hairs that gradually become shorter apically; femora longer than tibiae (110:60). Femora of hind legs beset with a little longer and more numerous bristly hairs. Genital segment black-brown with broad median strip on basal part above and base beneath testaceous. Winged forms unknown.

Type (male), *allotype* (female) and two female *paratypes*, taken in a large fresh water pond, Acapulco, Mex., Aug. 3, 1951, C. J. Drake and F. C. Hottes. Two apterous males (teneral) were also taken in the salt water lagoon.

This species belong to the group of *Rheumatobates* Bergroth that have slender and straight antennae and both middle and hind pairs of legs straight and unmodified in the male. The color, markings, long first antennal segment and strongly swollen anterior femora distinguishes the male from its congeners; and the long first antennal segment and long bristly spine-like hairs separates the female. The genital segments are without long hairs in both sexes.

Rheumatobates vegatus Drake and Harris, Rev. Bras. Biol., 2(3):401. 1942.

This insect was originally described from an apterous male, taken on saline waters, Isle of Pines, Cuba. Two males and 3 females, all apterous, are now at hand from San Juan, Porto Rico, July 9-12, 1914. The female is similar in color and marking, but stouter than the male. Both sexes exhibit slight variation in size of color markings, and the hairs on the sides of the first genital segment of the male vary a little in numbers (perhaps some rubbed off in nature).

Rheumatobates vegatus crinitus Herring.

Rheumatobates crinitus Herring, Fla. Ent., 32(4):160-165, Pl. 1. 1949.

This species is reduced to a variety of *R. vegatus* D. & H. The small differences in color and hairs on first male genital segment fall within the range of variation in typical examples of *vegatus*. The middle legs tend to be a little longer in *R. crinitus* Herring than in *negatus* (60:70), and these differences may prove not to be specific or constant. Herring (*loc. cit.*, pl. 1) has published an unusually fine illustration of *crinitus*.

Rheumatobates hungerfordi Wiley

Rheumatobates hungerfordi Wiley, Can. Ent., 1923, p. 202-205, 7 figs.

This striking species breeds in both standing and slowly flowing waters of streams. It was taken in large ponds, and near the banks in the

sluggish parts of streams in Mexico. Numerous specimens are at hand from Mexico (Cuidad Valles, July 20, 1950; Cuidad Victoria, July 29, 1951; Alvarado, July 29, 1951; Puebla, July 20, 1951, all collected by the authors). Many specimens are also at hand from several localities in New Mex., Ariz., Utah, and Tex.

Rheumatobates creaseri Hungerford

Rheumatobates creaseri Hungerford, Carn. Inst., Wash., Pub. No. 457, 1936.

Six specimens, Acapulco, Mex., Aug. 3, 1951, taken in a large fresh water pond, by the authors. The type series were collected in Yucatan, Mex. The middle legs, missing in type series, are described below.

Male: Middle pair of legs very long, black-fuscescent with apical part of coxae and base of trochanters testaceous; femora distinctly bowed, somewhat compressed laterally, sharply incrassate above apically, bifid behind, above with a short fringe of long hairs just before the apex, ends truncate with tibiae attached to lower end, with a broadly flattened hook curved around between the bifid ends; tibiae very much slenderer, straight, with a few long hairs near the middle, subequal in length to femora (132:142); coxae very strongly swollen, nearly cylindrical in outline, scarcely longer than wide, twice as wide as base of trochanters, the latter very short and slightly thicker than base of femora.

The middle legs are rather similar in length, size, form and modifications to *R. citatus*, n. sp. However, the two species are very distinct and may be separated as indicated beneath the description of the latter.

Rheumatobates citatus, sp. new

Apterous male: Moderately large, velvety black with testaceous markings. Antennae strongly swollen and modified. Middle and hind legs long, modified.

Size: Length, 2.75 mm.; width, 1.25 mm.

Head: Width across eyes, 1.00 mm. Interocular space less than three times the width of an eye. Head velvety black, sometimes brownish behind, beneath testaceous. Antennae quite stout, clothed with short hairs, all segments modified, fuscous-black with the underside of first segment largely brownish testaceous, the apical third of third and basal two-thirds of fourth whitish testaceous; segment I stout, somewhat arcuate, very strongly incrassate from base almost to apex, compressed and flattened on inner side, with several very long hairs beneath at apical third fused so as to form a large, black, spine-like process which points obliquely downward and forward, upper surface with short hairs more numerous and a little longer just before the apex; II short, bead-like, a small bump beneath at the base, the long hairs on inner side at the base fused so as to form a spine-like structure which is about as long as segment is thick; III gradually narrowed apically, beneath concave and longitudinally excavated on distal half, subbasally widened and projected posteriorly so as to form a distinct subbasal lobate projection, the excavated part (not lobate process) whitish testaceous, on the inner side at the base with an extremely long spine-like structure formed by fused hairs, with some hairs on edges of lobate projection, a few of which are fused on inner side; IV tapering apically, denticulate beneath

towards the tip; formula—I, 55; II, 13; III, 27; IV, 17. Head and eyes with usual long dark hairs. Rostrum extending a little beyond prosternum, dark fuscous, shining, the second segment paler and clothed beneath with a sparse row of long hairs on each side.

Thorax: Pronotum short, whitish testaceous with sides brownish black. Anterior legs brownish black with femora (save apex), coxae and trochanters pale testaceous; femora beneath with a sparse row of six or seven long slender seta-like spines. Sternum and venter pale testaceous. Mesonotum large, wider at base than median length (90:70), velvety brown-black tinged with bluish, with a large discal patch testaceous. Intermediate legs very long, brownish black with coxae and trochanters beneath and a small spot on each above testaceous; coxae very strongly incrassate, cylindrical, subequal in width and length, with a small tuft of hairs near the middle on each side (sometimes a few of the hairs fused); trochanters very short, slightly thicker than the base of the femora; femora very long, distinctly bowed, feebly enlarged basally, very strongly enlarged before apex, there about three times as thick as at base and somewhat bifid, with tibiae attached to lower end, beneath densely clothed with very short hairs which are less than half of the diameter of segment; with a flat hook at middle curved around between bifid ends; tibiae slender, with a short dense fringe of bristly hairs on the dorsal side before the middle and a sparse row of shorter hairs on the opposite side of the middle, nearly as long as femora (168:172); tarsi long slender, the first segment three times as long as the second (100:32). Hind legs long, slender, much shorter than the middle pair, brownish black with coxae and trochanters mostly testaceous; coxae moderately incrassate, much thicker and scarcely longer than trochanters (12:11); femora long, slender, straight, from the basal third to apex beset with a sparse row of long dark hairs which are two to three times as long as the width of the segment; tibiae slender, moderately bowed, with a short row of very long hairs on the basal half of the dorsal surface, much longer than femora (92:160); tarsi short, slender, the basal segment longest (21:11).

Abdomen: Black with last four or five connexival segments and last tergite testaceous, beneath brownish with median part and last ventrite testaceous, the latter shallowly emarginate behind. Genital segments small, the last testaceous.

Wingless female: Slightly stouter than male, color and markings similar; connexival segments largely testaceous, third antennal segment with usual long bristly hairs; antennal formula—I, 11; II, 6; III, 12; IV, 13. Anterior femora almost wholly testaceous, with extremely long whitish hairs beneath and also a sparse row of very long bristle-like spines on inner side. Middle and hind legs brownish black, with a sparse row of short seta-like black spines which lean outwards; hind femora with much shorter spines. Length: middle femora, 0.90 mm. and tibiae, 0.75 mm.; hind femora, 0.70 mm. and tibiae, 0.40 mm. Winged forms unknown.

Type (male), *allotype* (female) and 3 male *paratypes*, taken in the quiet waters of a small stream, about 20 miles south of Tehautepec, Mex., July 23, 1951, by the authors. One *paratype*, Acapulco, Mex., Aug. 3, 1951, taken by the authors.

Very similar in appearance and closely allied to *E. creaseri* Hunger-

ford, but easily differentiated from it by the differences in lengths and modifications of antennal segments and modifications of middle and hind legs. The first antennal segment is longer and the hind femora more densely fringed with brownish hairs that are about twice as long as the diameter of the segment; also the hind tibiae is a little bowed and beset above on basal half with a sparse row of extremely long dark hairs. In *R. creaseri*, the hind femora are much shorter than in *citatus* (86:160), and the tibiae are straight and do not bear long upright hairs.

Rheumatobates mexicanus, sp. new

Apterous male: Large, black with prominent testaceous markings. Antennae and hind pairs of legs incrassate, greatly modified.

Size: Length, 2.25 mm.; width, 1.00 mm.

Head: Width across eyes, 0.80 mm. Head black, sometimes brownish at base, with usual long hairs on each side, beneath testaceous with some brownish tinge. Rostrum dark fuscous, shining, the second segment with several long hairs on ventral side. Eyes reddish brown, each with two long dark hairs a little in front of hind margin. Antennae brown-black with basal part of first segment testaceous, moderately stout; segment I moderately swollen, becoming thicker beneath from base for about two-fifths its length, there thickest, near the apical third beneath with some long dark hairs, several of which are fused so as to form a long stout spine-like structure which is directed antero-downwards, becoming slenderer and almost cylindrically anteriorly, broadly constricted before the apex; II very short, at the base beneath with the fused hairs pointed downwards; III moderately long, with some long dark stiff hairs beneath, strongly abruptly bent outwards near the base, on the lower side at the base with several long hairs fused so as to form an extremely long spine-like process, with a small bump before the apex on the outside, beneath near the apex with some long hairs fused, distinctly concave between bump and elbow on the outer surface; IV rather short, concave and flattened beneath with apical part turned downwards, and with a couple bristly hairs; formula—I, 45; II, 10; III, 28; IV, 14.

Thorax: pronotum short, blackish, with or without a diamond-shaped testaceous area, beneath entirely testaceous. Fore legs brown-black with coxae, trochanters, and almost entire femore (save apex) pale testaceous; femora beneath with a sparse row of very long slender seta-like spines brownish, also with three or four long bristly hairs on the outer edge of under surface at base; tibiae scarcely long than tarsi, with long dark bristly hairs beneath. Mesonotum large, wider than long, brownish black with the testaceous discal spot variable in size or even entirely absent, sometimes with anterior part of spot running narrowly to anterior border of mesonotum; beneath and most of the sides testaceous. Middle legs very long, moderately stout, straight, brownish black; coxae strongly swollen, testaceous, a little longer than wide; trochanters small, dark above, scarcely thicker than base of femora; femora extremely long, longer than tibiae (170:140), the outer surface on the apical half clothed with short hairs which are not as long as the width of the segment, the inner surface on apical two-fifths fringed with a little longer hairs, some of which before the apex are practically three times as long as the breadth of the segment; tibiae longer than tarsi (144:115), fringed on

the outside to a little beyond the middle with a row of hairs which are subequal in length to the width of the segment, clothed on outer and inner edges of basal half within with longer hairs, there in these rows with three small groups of hairs, the middle group much longer, several times as long as the diameter of the segment; first tarsal segment more than three times as long as the second (82:25). Hind legs brownish black with coxae and base of trochanters testaceous; coxae long, very strongly swollen, thickest near the base, thence arcuately narrowed apically, clothed with very short pubescence, longer than trochanters (42:30); trochanters moderately thick, with a few fine hairs beneath; femora rather short, very strongly bowed within, somewhat rounded basally, thence flattened and sort of scooped out on concave surface of apical fourth, clothed with numerous short hairs on entire dorsal surface, beneath just in front of small knob at base with long hairs fused so as to form a long dark spine-like process, another extremely long spine like-process (sometimes stiff hairs not very well fused and more or less separated) a little before the apex, near the upper edge about the middle with a peculiarly modied, flattened, hair-like formation; the femora much stouter and shorter than the tibiae (75:90); tibiae slender, moderately bowed, curved outward, rather densely clothed on the entire outer margin with dark hairs which are about as long as the width of the segment, clothed on the inside with shorter hairs which are nearly as long as breadth of the segment; tarsi short, the segments subequal (21:20).

Abdomen: Black-brown with the last two, three or even all of the connexival segments testaceous, last tergite also more or less testaceous; metanotum and abdomen with some bluish tinge. Venter testaceous with terminal segment roundly emarginate behind. First genital segment testaceous, the last blackish.

Apterous female: Slightly broader than male, similarly colored but with testaceous areas tending to be larger. Each connexival segment with a brown bristly hairs near the middle of the upper edge. Basal part of the genital segment above almost quadrate, dark or largely testaceous, sometimes dark with median stripe testaceous. Middle and hind legs long, slender, brownish black with coxae and trochanters testaceous; middle femora above with a sparse row of six or seven slender spines, which are rather evenly spaced, tilted outwards and nearly as long as the diameter of the segment, femora longer than tibiae (150:128); tarsi long, basal segment much longer than second (38:12); hind femora much longer than tibiae (110:64). Antennae brownish black with first segment almost wholly testaceous; III with usual long bristly hairs; formula—I, 20; II, 9; III, 20; IV, 25.

Winged form: Pronotum large with a large testaceous area, scarcely longer than wide (78:75). Hemelytra much longer than abdomen, dark fuscous with basal part of membrane up to deãlating suture whitish, nervures dark fuscous, the outer nervure ciliate on basal margin. Length, 2.75 mm.; to breaking suture, 1.00 mm.

Type (male) and *allotype* (female), both apterous, Acapulco, Mex., taken in a salt water lagoon, Aug. 3, 1951. *Paratypes:* Many specimens, apterous, macropterous and deãlated males and females, taken with type; Aguascalientes, Mex., Aug. 5, 1950, and July 13, 1951; Puebla, July 20, 1951; Oaxaca, July 21, 1951; Tehauntepee, July 28, 1951;

Mexico City, July 30, 1950; Ciudad Valles, July 14, 1950, and Aug. 8, 1951; Ciudad Victoria, July 14, 1950, and Aug. 8, 1951; Alvarado, July 28, 1951; and Veracruz, July 29, 1950; all collected in Mexico by the authors.

This species was taken in numbers in fresh water lakes or quiet parts of both small and large streams in all of the above localities, and in brackish salt water lagoons connect with the oceans at Veracruz, Alvarado, Tehautepec, and Acapulco. Although the largest and most compact schools were found in large ponds or small lakes, the species was quite common in the quiet waters of the wide reaches of both large and small streams and salt water lagoons. The brackish waters in the large lagoon near Acapulco and the long deep lagoon or inland harbor at Alvarado were almost as salty as the ocean. At the latter place, a deep wide channel connected with the ocean so that large ships could enter and dock in the protected lagoon.

The shape and modifications of the antennae and two hind pairs of legs sets this species off from its congeners. It seems to be by far the commonest and most widely disseminated member of the genus in Mexico.

Rheumatobates crassifemur Esaki

Rheumatobates crassifemur Esaki, Ann. Mus. Nat. Hung., 23:149, fig. 9. 1926.

This species is widely disseminated in South America; specimens have been examined from Argentina, Paraguay, Brasil and Panama. It inhabits both fresh and saline waters.

In a deep brackish pool near the mouth of a small stream, not far from old Panama City, Panama, *R. crassifemur* was taken in numbers by C. J. Drake. The pool was supplied by fresh water from the stream during low tide, but at high tide it was completely submerged by tidal waters; high waves also over-ran the pool when the ocean was rough. Although many individuals were found here and there standing or cruising about on the quiet waters, very compact schools of apterous and alate adults and nymphs in various stages of development were dwelling in secluded haunts near the shore.

Other water-striders collected in the same pool were *R. minutus* Hungerford, *Trepobates taylori* (Kirkaldy) and *T. trepidus* Drake and Harris. Several species of halobatinids are able to breed and live on quiet brackish waters of pools, lagoon and more or less salty waters at the mouth of streams emptying into the seas. Two species, *R. clavis* Drake and Harris and *R. crassicornis* Esaki are figured.

LIST OF SPECIES

Genus *Rheumatobates* Bergroth, 1892

Hymenobates Uhler, 1894

Halobatopsis Ashmead, 1897

Type of genus, *R. rileyi* Bergroth, 1908

1. *bergrothi* Meinert, 1895.....Pan., V. I., Grenada.
2. *bonariensis* (Berg), 1898.....Arg., Braz., Uru., Para., Bol.
var. wrighti Drake and Harris, 1937.....With typical form.
3. *carvalhoi* Drake and Harris, 1944.....Braz.

Drake and Hottes—Genus Rheumatobates Bergroth 155

4. *citatus* Drake and Hottes, 1951..... Mex.
5. *clanis* Drake and Harris, 1932..... Brit. Honduras.
6. *crassifemur* Esaki, 1936..... Arg., Braz., Para.
7. *creaseri* Hungerford, 1936..... Mex.
8. *esaki* Schroeder, 1931..... Braz.
9. *hungerfordi* Wiley, 1923..... Mex., U. S. (Tex., Ariz., N. Mex., Ut.).
10. *imitator* (Uhler), 1894..... W. I.
bergrothi Barber, 1935
11. *klagei* Schroeder, 1931..... Braz.
12. *meinerti* Schroeder, 1931..... Haiti
13. *mexicanus* Drake and Hottes, 1951..... Mex.
14. *minutus* Hungerford, 1936..... Mex., Pan., Peru, Trinidad
var. flavidus Drake and Harris, 1942..... Peru
15. *petilus* Drake and Hottes, 1951..... Mex.
16. *praeposterus* Bergroth, 1908..... Guat.
17. *rileyi* Bergroth, 1908..... U. S. (East of Rocky Mts.)
beginini Ashmead, 1894
var. palosi Blatchley, 1926..... With typical form
18. *tenuipes* Meinert, 1895..... U. S. (East of Miss. R.)
19. *trulliger* Bergroth, 1915..... U. S. (East of Miss. R.)
20. *vegatus* Drake and Harris, 1942..... Cuba, Porto Rico.
var. crinitus Herring, 1949..... U. S. (Fla.)